भारतीय मानक
Indian Standard

IS 17055 (Part 9) : 2020

मृदा-संचालन मशीनरी — सुरक्षा

भाग 9 पाइपलेयर्स की अपेक्षाएँ

(दूसरा पुनरीक्षण)

Earth-Moving Machinery — Safety

Part 9 Requirements for Pipelayers

(Second Revision)

ICS 53.100

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भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुरशाह ज़फर मार्ग, नई दिल्ली – 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI-110002
www.bis.gov.in www.standardsbis.in

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Material Handling Systems and Equipment Sectional Committee, MED 07

FOREWORD

This Indian Standard (Part 9) (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Material Handling Systems and Equipment Sectional Committee had been approved by the Mechanical Engineering Division Council.

This standard supersedes the IS 17055 (Part 9) : 2019/ISO 20474-9 : 2017 'Earth moving machinery — Safety: Part 9 Requirements for pipe layers'.

This Indian Standard is published in several parts. The other parts in this series are:

Part 1 General requirements
Part 2 Requirements for tractor dozers
Part 3 Requirements for loaders
Part 4 Requirements for backhoe loaders
Part 5 Requirements for hydraulic excavators
Part 6 Requirements for dumpers
Part 7 Requirements for scrapers
Part 8 Requirements for graders
Part 10 Requirements for trenchers
Part 11 Requirements for earth and landfill compactors
Part 12 Requirements for cable excavators
Part 13 Requirements for rollers

The composition of the Committee responsible for the formulation of this standard is given in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

EARTH-MOVING MACHINERY — SAFETY

PART 9 REQUIREMENTS FOR PIPELAYERS

(Second Revision)

1 SCOPE

This standard (Part 9) specifies the safety requirements of pipelayers as defined in IS/ISO 6165. It is intended to be used in conjunction with IS 17055 (Part 1), which specifies general safety requirements common to two or more earth-moving machine families. The specific requirements given in this standard take precedence over the general requirements of IS 17055 (Part 1).

1.1 This standard deals with all significant hazards, hazardous situations and events relevant to the earthmoving machinery within its scope [*see* IS 17055 (Part 1), Annex A] when used as intended or under conditions of misuse reasonably foreseeable by the manufacturer. It specifies the appropriate technical measures for eliminating or reducing risks arising from relevant hazards, hazardous situations or events during commissioning, operation and maintenance.

2 REFERENCES

The standards listed below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards indicated below:

IS No./Other Publication	*Title*
IS/ISO 6165 : 2012	Earth-moving machinery — Basic types — Identification and terms and definitions
IS/ISO 9244 : 2008	Earth-moving machinery — Machine safety labels — General principles
IS/ISO 12117-2 : 2008	Earth-moving machinery — Laboratory tests and performance requirements for protective structures of excavators: Part 2 Roll-over protective structures(ROPS) for excavators of over 6 t
IS 17055 (Part 1) : 2018	Earth-moving machinery — Safety: Part 1 General requirements
ISO 7136 : 2006	Earth-moving machinery — Pipelayers — Terminology and commercial specifications
ISO 7597 : 2013	Forged steel lifting hooks with latch, grade 8
ISO 8813 : 1992	Earth-moving machinery — Lift capacity of pipelayers and wheeled tractors or loaders equipped with side boom
ISO 16625 : 2013	Cranes and hoists — Selection of wire ropes, drums and sheaves
ISO 19472 : 2006	Machinery for forestry — Winches — Dimensions, performance and safety

3 TERMS AND DEFINITIONS

For the purposes of this standard, the terms and definitions given in IS 17055 (Part 1) and ISO 7136 shall apply in addition to the following.

3.1 Pipelayer — Self-propelled crawler or wheeled machine, having pipelaying equipment with main frame, a load-hoist mechanism, vertically pivotable boom, and counterweight, primarily designed to handle and lay pipes

3.1.1 *Side-boom Pipelayer* — Pipelayer with the vertically pivotable boom mounted to the side of the machine so that it only moves in a vertical direction.

NOTE — To entry: *See* Annex A for illustrations.

3.1.2 *Rotating Pipelayer*

Pipelayer (3.1) with rotating upper structure to which the vertically pivoting boom is attached so that the boom can also move with the rotation of the upper structure

NOTE — To entry: *See* Annex A for illustrations.

4 SAFETY REQUIREMENTS AND-PROTECTIVE MEASURES

4.1 General

Pipelayers shall comply with the safety requirements and protective measures of IS 17055 (Part 1), in as far as those are not modified by the specific requirements of this clause.

4.2 Operator Station

4.2.1 *Cab*

If a cab is provided **4.3.2.9** of IS 17055 (Part 1), , shall apply, with the addition that pipelayers shall be provided with a motorized washer and wipers, in the working direction.

4.2.2 *Operator Protection*

Side-boom pipelayers shall comply with **4.3.3** of IS 17055 (Part 1).

Rotating pipelayers shall be provided with a ROPS in accordance with IS/ISO 12117-2.

4.3 Stability and Lifting Equipment

4.3.1 *General*

Clause **4.11** of IS 17055 (Part 1), , shall apply, in addition to the **4.3.2.1** to **4.3.2.5**.

4.3.2 *Lifting Equipment*

4.3.2.1 *General*

Lifting equipment shall be in accordance with ISO 8813.

4.3.2.2 *Load lowering speed*

A device for controlling the lowering speed of the boom and the hook shall be fitted so that under normal working conditions the operator can control movement and stop the load. This device shall not prevent the deliberate release of the free fall of the load hook (hook winch only).

4.3.2.3 *Pipe-laying brakes*

The pipe-laying system shall be fitted with brakes which can be released by controls and automatically applied when the operator stops actuating or when the power source fails. The brakes shall be designed to withstand 1.5 times the rated lift capacity under conditions specified by the manufacturer.

4.3.2.4 *Hooks*

Hooks shall withstand a test load of twice the working load limit (WLL) without permanent deformation and a breaking force (BF) of four times the WLL according to ISO 7597.

Hooks also used for applications other than pipe laying (for example, transport or holding of special tooling equipment) shall have a safety latch in accordance with ISO 7597.

4.3.2.5 *Ropes*

Ropes shall be selected in accordance with ISO 16625.

4.4 Rear-mounted Winch

If a pipe layer is equipped with a rear-mounted winch, then with the exception of the load-hoist mechanism as specified in ISO 7136 and **4.23** of IS 17055 (Part 1) shall apply.

5 INFORMATION FOR USE

5.1 Safety Labels

Clause **6.1** of IS 17055 (Part 1), , shall apply in addition to the following:

a) When a winch is fitted, a specific safety label using the appropriate symbol in accordance with IS/ISO 9244 (*see* also IS/ISO 6405-2, symbol no. 18) shall be used.

5.2 Operator's Manual

Clause **6.1** of IS 17055 (Part 1), shall apply in addition to the following:

a) Specific instructions for operators in how to work as a team (for example, coordination, communication);
b) Instructions for operation of the boom and hoist mechanism;
c) Instructions for operation and safe use of rear-mounted winches, if fitted; and
d) Instructions regarding any other system(s) installed in the machine shall be provided.

5.3 Machine Marking

Clause **6.3** of IS 17055 (Part 1), shall apply in addition to the following:

a) Marking of the maximum rated bare drum pull force of the winch, if fitted, in accordance with ISO 19472.

6 BIS CERTIFICATION MARKING

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

ANNEX A

ILLUSTRATIONS

See Figures **A.1** to **A.5**.

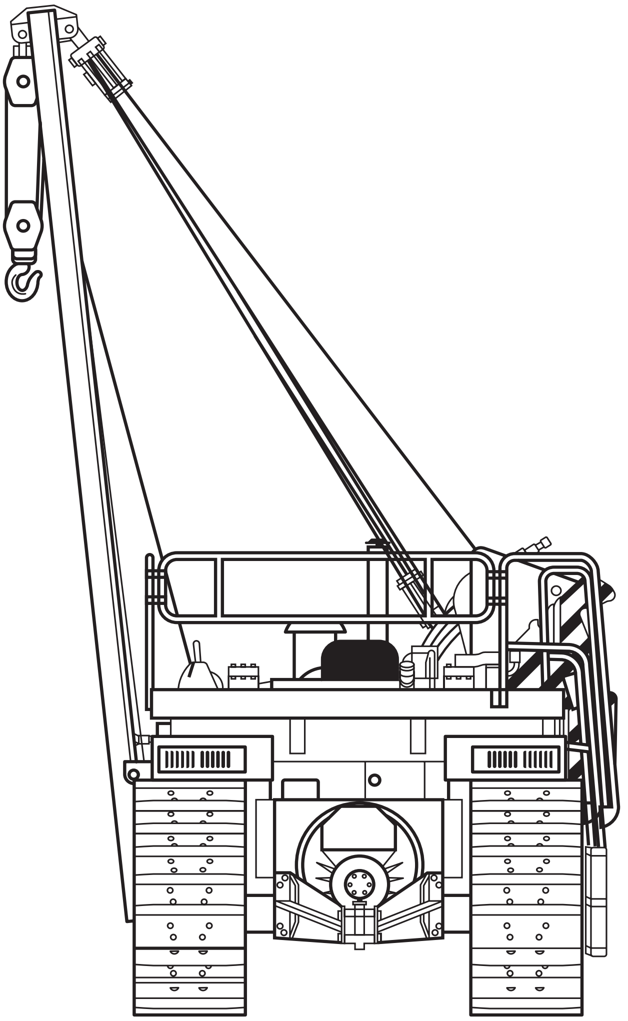

Fig. A.1 — Crawler Side-Boom Pipelayer — Front View

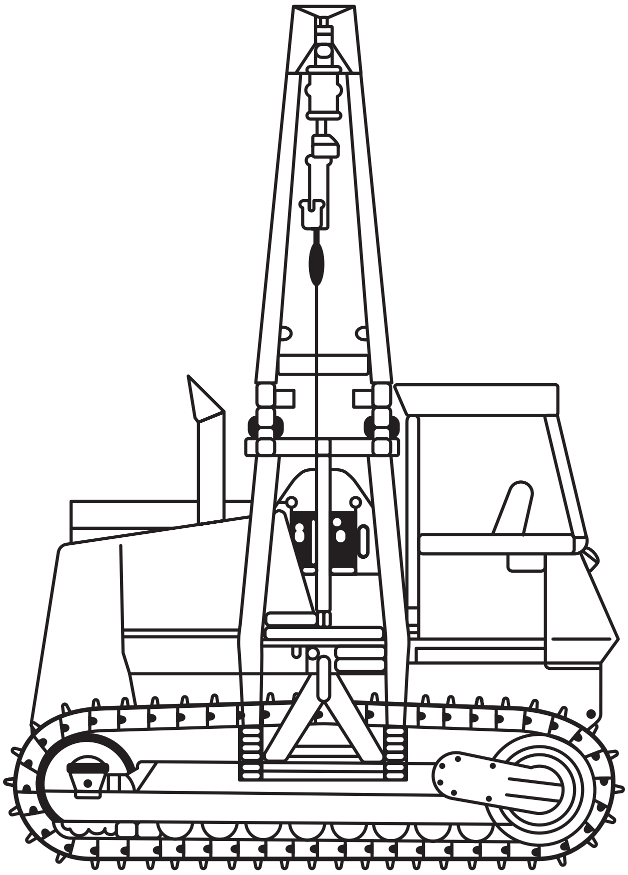

FIG. A.2 — CRAWLER SIDE-BOOM PIPELAYER — SIDE VIEW

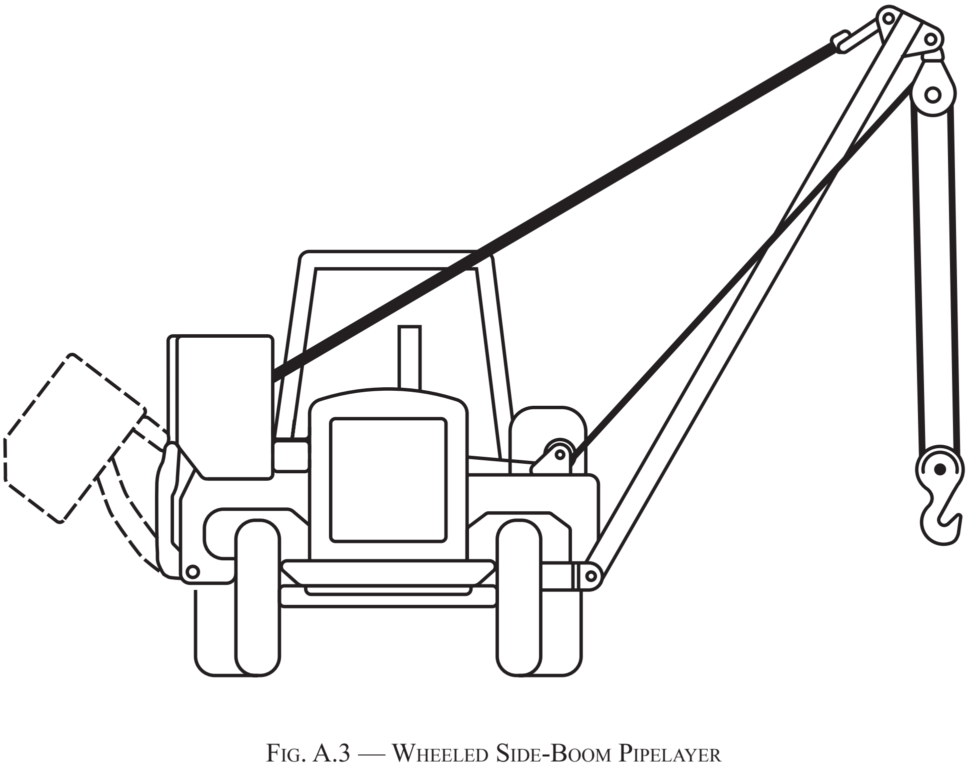

FIG. A.3 — WHEELED SIDE-BOOM PIPELAYER

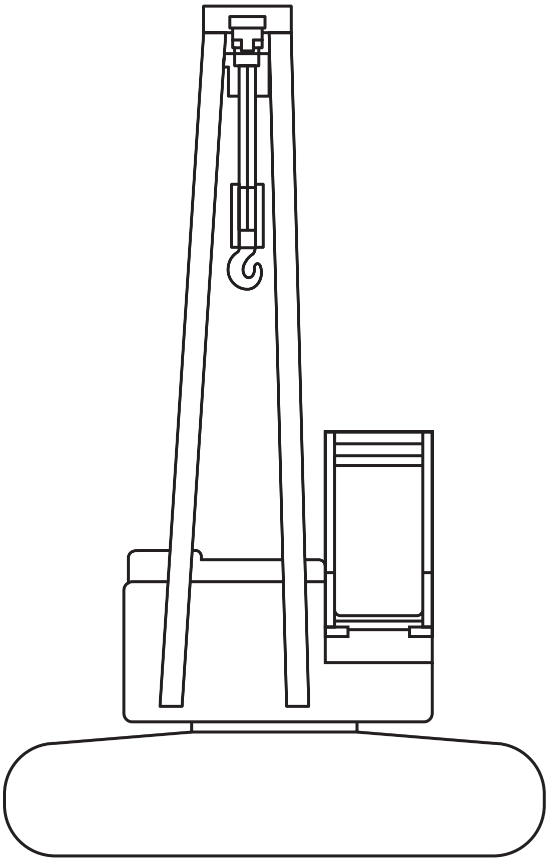

FIG. A.4 — CRAWLER ROTATING PIPELAYER — FRONT VIEW

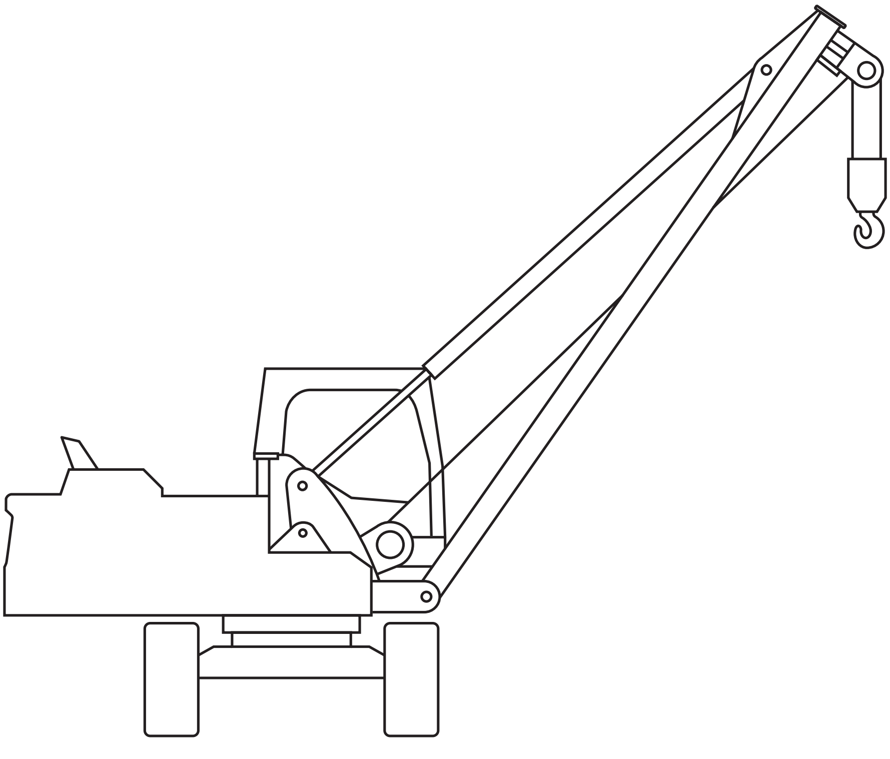

FIG. A.5 — CRAWLER ROTATING PIPELAYER — SIDE VIEW

ANNEX B

(*Foreword*)

COMMITTEE COMPOSITION

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Department of Heavy Industry, Ministry of Heavy Industries & Public Enterprises, New Delhi	Shri Sushil Lakra Shri Sanjay Chavre (*Alternate*)
Escorts Construction Equipment Ltd, Faridabad	Shri Ashish Mathur Shri Faiz Ahmed (*Alternate*)
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JCB India, Ballabgarh	Shri Saurabh Dalela Shri Vivek Rawat (*Alternate*)
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The Automotive Research Association of India (ARAI), Pune	Shri A. Akbar Badusha
Volvo Construction Equipment, Bengaluru	Shri V. R. S. P. Polipalli Shri K. Raghuraman (*Alternate*)

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BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402 *Website*: www.bis.gov.in

Regional Offices: *Telephones*

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002 — 2323 7617, 2323 3841

Eastern : 1/14 C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi KOLKATA 700054 — 2337 8499, 2337 8561, 2337 8626, 2337 9120

Northern : Plot No. 4-A, Sector 27-B, Madhya Marg CHANDIGARH 160019 — 265 0206, 265 0290

Southern : C.I.T. Campus, IV Cross Road, CHENNAI 600113 — 2254 1216, 2254 1442, 2254 2519, 2254 2315

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